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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
) Group Art Unit: 2611
) Claudio Borean et al.)
) Examiner: Aghdam, Freshteh N.
Application No. 10/551,419)
) Confirmation No. 4050
Filed: September 30, 2005)
)
For: METHOD OF OFDM TRANSMISSION)
) IN A MILLIMETRE-WAVE WLANS)
) AND CORRESPONDING SYSTEM)

Attention: Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF UNDER BOARD RULE § 41.37

In support of the Notice of Appeal filed September 13, 2010, and further to
37 C.F.R. § 41.37, Appellant presents this brief and encloses the fee payment of \$540.00
required under 37 C.F.R. § 41.20(b)(2).

This Appeal is filed to appeal the rejections of claims 23-25, 27-31, and 33-44 set forth in the Final Office Action mailed April 14, 2010.

This Appeal Brief is being filed subsequent to the October 21, 2010, mailing of a Notice of Panel Decision from Pre-Appeal Brief Review. Pursuant to the Notice of Panel Decision, the time period for filing the Appeal Brief is reset to one month from the mailing date of the Notice, or the balance of the two-month time period running from receipt of the Notice of Appeal, whichever is greater. Thus, this Appeal Brief is timely filed before November 22, 2010 (November 21st being a Saturday), measured from the mailing date of the Notice.

If any additional fees are required or if the enclosed payment is insufficient, Appellant requests that the required fees be charged to Deposit Account No. 06-0916.

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I. REAL PARTY IN INTEREST

Telecom Italia S.p.A. is the real party in interest, the assignee of the entire right, title, and interest in the application, as indicated by an Assignment recorded on April 30, 2005.

II. RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences, of which Appellant, Appellant's legal representative, or Assignee is aware, that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 23-25, 27-31, and 33-44 are pending and are the subject of this appeal.

Claims 1-22, 26, and 32 have been canceled without prejudice or disclaimer of their subject matter.

Appellant appeals the rejection of claims 23-25, 27-31, and 33-44 under 35 U.S.C. § 103(a) as being unpatentable over “the instant application’s disclosed prior art” (“*Prior Art*”), the rejection being made in the Final Office Action mailed April 14, 2010.

Pursuant to 37 C.F.R. § 41.37(c)(1)(iii) and (viii), Section IX, entitled “Claims Appendix,” contains a clean copy of the claims involved in this appeal.

IV. STATUS OF AMENDMENTS

No claim amendments have been made subsequent to issuance of the Final Office Action.
Appellant last filed an Amendment on March 9, 2010, which has been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 23 is directed to a method of managing a transmission system, wherein a plurality of sets of samples ($N \times M$) is subject to an integral transform transmitted in said integral-transformed format over a millimetre-wave carrier and subject to a complementary integral transform to reconstruct said plurality of sets of samples ($N \times M$) (*see, e.g., specification, p. 3, ll. 12-19*). The method comprises including in said system a plurality of terminals (*see, e.g., specification, p. 3, ll. 20-22*). The method further includes assigning to said terminals respective non-overlapping sets of samples or positions within said plurality of sets of samples (*see, e.g., specification, p. 3, ll. 22-24*). The method also includes transmitting, simultaneously, a first set ($X_1, X_2, \dots X_N$) of non-zero first samples pertaining to a first terminal of said plurality by inserting said first samples in the respective position assigned to said first terminal, and a second set ($X_{N+1}, X_{N+2}, \dots X_{2N}$) of non-zero second samples pertaining to a second terminal of said plurality by inserting said second samples in the respective position assigned to said second terminal (*see, e.g., specification, p. 10, ll. 7-20*).

Independent claim 28 is directed to a transmission system (*see, e.g., specification, p. 3, l. 4*). The transmission system comprises an integral transform module for subjecting a plurality of sets of samples including at least one first set ($X_1, X_2, \dots X_N$) of a non-zero sample to an integral transform (*see, e.g., specification, p. 11, ll. 9-13, and FIG. 4*). The transmission system further includes a first transmitter for transmitting, over a millimetre-wave carrier, assigned non-overlapping sets comprising at least one first set ($X_1, X_2, \dots X_N$) of samples in said integral-transformed format (*see, e.g., specification, p. 11, ll. 16-19, and FIG. 2*). The transmission system further includes a second transmitter for transmitting, over a millimetre-wave carrier and simultaneously with the first transmitter, assigned non-overlapping sets comprising at least one

second set (X_{N+1} , X_{N+2} , ... X_{2N}) of samples in said integral-transformed format (*see, e.g.,* specification, p. 10, ll. 7-20, p. 11, ll. 16-19, and FIG. 2). The transmission system further includes a receiver for receiving said sets of samples transmitted in said integral-transformed format (*see, e.g.,* specification, p. 8, ll. 29-31, and FIG. 2). The transmission system also includes a complementary integral transform module for subjecting said samples transmitted in said integral-transformed format as received by said receiver to a complementary integral transform and reconstructing therefrom said at least one set of non-zero samples (*see, e.g.,* specification, p. 12, ll. 3-7, and FIG. 4).

VI. GROUNDS OF REJECTION

1. Claims 23-25, 27-31, and 33-43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over “the instant application’s disclosed prior art” (“*Prior Art*”).

VII. ARGUMENT

A. Introduction

Each claim of this patent application is separately patentable and, upon issuance of a patent, will be entitled to a separate presumption of validity under 35 U.S.C. § 282. For convenience in handling this appeal, however, the claims will be grouped as follows. All of the claims do not stand or fall together.

1. With respect to the rejection of claims 23-25, 27-31, and 33-44 under 35 U.S.C. § 103(a), claims 23-25, 27, and 42 stand or fall together, and claims 28-31, 33-41, 43, and 44 stand or fall together.

B. Detailed Arguments

1. The Rejection of Claims 23-25, 27-31, and 33-44 under 35 U.S.C. § 103(a) Should Be Reversed.

The rejection of claims 23-25, 27-31, and 33-44 under 35 U.S.C. § 103(a) should be reversed, because the Examiner's rejection contains clear error and the Examiner has not properly resolved the *Graham* factual inquiries. The proper resolution of the *Graham* factual inquiries is the requirement for establishing a framework for an objective obviousness analysis.

See M.P.E.P. § 2141(II), citing to *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), as reiterated by the U.S. Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007).

The Examiner has not properly determined the scope and content of the prior art, nor has the Examiner properly ascertained the differences between the claimed invention and the prior art, at least because the Final Office Action has not properly interpreted the prior art and considered *both* the invention *and* the prior art *as a whole*. *See* M.P.E.P. § 2141(II)(B).

Specifically, *Prior Art* does not disclose or suggest at least the following claim elements recited in claim 23 (claim 28 containing similar recitations):

transmitting, simultaneously, a first set ($X_1, X_2, \dots X_N$) of non-zero first samples pertaining to a first terminal of said plurality by inserting said first samples in the respective position assigned to said first terminal, and a second set ($X_{N+1}, X_{N+2}, \dots X_{2N}$) of non-zero second samples pertaining to a second terminal of said plurality by inserting said second samples in the respective position assigned to said second terminal. (emphases added)

The Examiner admitted that *Prior Art* “does not expressly teach” the above claim elements. *See* Final Office Action, p. 5. However, the Examiner alleged that “it is obvious and/or a matter of design choice to assign different/distinct (non-overlapping) subspaces in a buffer to different sets of samples belonging to different terminals in order to transmit the first and second non-zero samples simultaneously.” Final Office Action, p. 5. This allegation is incorrect.

Prior Art teaches that “[c]urrent WLAN standards such as IEEE 802.11a and IEEE 802.11b provide for all the stations located in a certain access area being connected by sharing only one channel at a time.” Specification, p. 1, ll. 28-31 (emphases added). In view of this, *Prior Art* does not teach transmitting different sets of samples simultaneously, but rather to “stagger [transmission of data from various local stations] over time by causing transmission from or to each single local station to take place within a given time interval.” Specification, p. 9, l. 31 - p. 10, l. 2 (emphases added). *Prior Art* actually “teaches away” from claim 23, and such a leap to the features of claim 23 would not have been predictable. *See, e.g.,* 75 Fed. Reg. pp. 53645 and 53659 (September 1, 2010), noting that “familiar lines of argument still apply,

including teaching away from the claimed invention by the prior art ... [i]n deed, they may have even taken on added importance in view of the recognition in *KSR*....”

In view of the “teaching-away” of *Prior Art* and the fact that *Prior Art* teaches WLAN standards, a person of ordinary skill in the art would not have been motivated to choose a design that is contrary to the standards taught in *Prior Art*, without having the disclosure of the present application and benefit taught therein. Accordingly, contrary to the allegation in the Final Office Action, the difference between *Prior Art* and the claimed subject matter is not a matter of design choice/requirement. *See* Final Office Action, p. 5.

Moreover, methods consistent with the claims and embodiments may perform separation of signal samples (generated in the frequency domain conversion process) using different allocations into the buffer, and then use physical separation to access and filter different transmitting stations (by selecting the portion of the buffer needed for the communication). Such methods are not covered by either existing WiFi standards or any other prior art. Standards and solutions like IEEE802.11a, b, and g do not use spatial separation and recombination of samples in a buffer in order to perform channel access. Instead, they merely use CSMA/CA procedure (collision avoidance access).

In a Response to Arguments section of the Final Office Action, the Examiner cited *Dann v. Johnston*, quoting that the “mere existence of differences between the prior art and an invention does not establish the invention’s nonobviousness.” Final Office Action, p. 3. As explained above, however, there is a substantial gap between *Prior Art* and the claims. This gap is so great that it would not have been obvious to one of ordinary skill in the art to bridge this gap. *See* M.P.E.P. § 2141(III).

Thus, the Examiner has neither properly determined the scope and content of the prior art, nor properly ascertained the differences between the prior art and the claimed invention. Independent claim 23 is not obvious over *Prior Art*, and the rejection of this claim should therefore be reversed. Independent claim 28, while different in scope, contains similar recitations as independent claim 23. Therefore, independent claim 28 is separately not obvious over *Prior Art*, and the rejection of this claim should also be reversed.

In addition, the rejection of dependent claims 24, 25, 27, 29-31, and 33-44 should be reversed, at least due to the respective dependence of these claims from independent claim 23 or 28, and because these dependent claims recite additional features not taught or suggested by *Prior Art*.

Therefore, Appellant requests that the rejection of claims 23-25, 27-31, and 33-44 under 35 U.S.C. § 103(a) be reversed.

VIII. CONCLUSION

Pending claims 23-25, 27-31, and 33-44 are allowable. Appellant respectfully requests that the Board reverse the Examiner's rejections.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: November 22, 2010

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IX. CLAIMS APPENDIX

Claims Appendix to Appeal Brief Under Rule 41.37(c)(1)(viii)

1.-22. (Cancelled)

23. A method of managing a transmission system wherein a plurality of sets of samples ($N \times M$) is subject to an integral transform transmitted in said integral-transformed format over a millimetre-wave carrier and subject to a complementary integral transform to reconstruct said plurality of sets of samples ($N \times M$), comprising the steps of:

including in said system a plurality of terminals;

assigning to said terminals respective non-overlapping sets of samples or positions within said plurality of sets of samples; and

transmitting, simultaneously, a first set ($X_1, X_2, \dots X_N$) of non-zero first samples pertaining to a first terminal of said plurality by inserting said first samples in the respective position assigned to said first terminal, and a second set ($X_{N+1}, X_{N+2}, \dots X_{2N}$) of non-zero second samples pertaining to a second terminal of said plurality by inserting said second samples in the respective position assigned to said second terminal.

24. The method of claim 23, further comprising the steps of:

including in said system at least one further terminal adapted for exchanging samples with said plurality of terminals; and

- causing said at least one further terminal to subject to at least one of said integral transform and said complementary integral transform a plurality of sets of samples including at least two non-overlapping sets of non-zero samples, said two non-overlapping sets of samples pertaining to two respective different terminals of said plurality.
25. The method of claim 23, wherein said integral transform is selected from the group of the Fast Fourier Transform (FFT) and the Inverse Fast Fourier Transform (IFFT).
26. (Cancelled)
27. The method of claim 23, wherein said millimetre-wave carrier is selected in the frequency range of 60 GHz.
28. A transmission system comprising:
an integral transform module for subjecting a plurality of sets of samples including at least one first set ($X_1, X_2, \dots X_N$) of a non-zero sample to an integral transform;
a first transmitter for transmitting, over a millimetre-wave carrier, assigned non-overlapping sets comprising at least one first set ($X_1, X_2, \dots X_N$) of samples in said integral-transformed format;
a second transmitter for transmitting, over a millimetre-wave carrier and simultaneously with the first transmitter, assigned non-overlapping sets comprising at least one second set ($X_{N+1}, X_{N+2}, \dots X_{2N}$) of samples in said integral-transformed format;

a receiver for receiving said sets of samples transmitted in said integral-transformed format; and a complementary integral transform module for subjecting said samples transmitted in said integral-transformed format as received by said receiver to a complementary integral transform and reconstructing therefrom said at least one set of non-zero samples.

29. The system of claim 28, wherein at least one terminal having assigned a non-overlapping set of samples or position within said plurality of sets of samples and comprising at least one of:
 - said integral transform module and said transmitter; or
 - said receiver and said complementary integral transform module.
30. The system of claim 28, further comprising at least one further terminal adapted for exchanging samples with said plurality of terminals, said at least one further terminal including at least one of said integral transform module and complementary integral transform module for subjecting to at least one of said integral transform and said complementary integral transform sets of samples including at least two non-overlapping sets of non-zero samples, non-overlapping sets of samples pertaining to two respective different terminals of said plurality.
31. The system of claim 30, in the form of a WLAN network, wherein at least one further terminal is an access point of said WLAN network.
32. (Cancelled)

33. The system of claim 28, wherein at least one of a transmitter and receiver operates over a carrier in the frequency range of 60 GHz.
34. A transmitter terminal for the transmission system of claim 28, comprising:
 - a buffer for receiving said plurality of sets of samples;
 - an integral transform module for subjecting said plurality of sets of samples in said buffer to an integral transform to generate signals to be transmitted in an integral transformed format; and
 - sample allocation circuitry for selectively arranging at least one set of generally non-zero samples to be transmitted in a respective position of said buffer.
35. The transmitter terminal of claim 34, wherein allocating circuitry is configured for allocating at least a single set of generally non-zero samples in a single, respective set of positions of said buffer, said set allocation being indicative of said transmitter terminal.
36. The transmitter terminal of claim 33, comprising an RF module operating in the millimetre-wave range.
37. The transmitter terminal of claim 36, wherein said RF module operates in the range of 60 GHz.
38. A receiver terminal for the transmission system of claim 28, comprising:
 - a receiver for receiving samples transmitted in said integral-transformed format;
 - a buffer for receiving said plurality of sets of samples;

a complementary integral transform module for subjecting said sets of samples in said buffer to a complementary integral transform and reconstructing therefrom said at least one set of generally non-zero samples; and sample allocation circuitry for selectively arranging at least one set of generally non-zero samples in a respective position of said buffer.

39. The receiver terminal of claim 38, wherein said allocating circuitry is configured for allocating at least a single set of generally non-zero samples in a single, respective set of positions of said buffer, said set allocation being indicative of the transmitter.
40. The receiver terminal of claim 38, comprising a receiver operating in the millimetre-wave range.
41. The receiver terminal of claim 40, wherein said receiver operates in the range of 60 GHz.
42. A non-transitory computer readable medium encoded with a computer program product, the computer program product including software code portions performing the method of claim 23 when executed by a computer.
43. A non-transitory computer readable medium encoded with a computer program product, the computer program product including software code portions performing the method of claim 34 when executed by a computer.
44. A non-transitory computer readable medium encoded with a computer program product, the computer program product including software code portions performing the method of claim 38 when executed by a computer.

X. EVIDENCE APPENDIX

NONE

XI. RELATED PROCEEDINGS APPENDIX

NONE